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CLAIMS

What is claimed is:

5   1.   A method for processing tomosynthesis image data comprising:
           identifying a plurality of non-uniform weighting factors for use in back-
projection processing of image data representative of X-ray attenuation by a subject of
interest at multiple source positions corresponding to multiple projections;
           accessing the image data; and
10   back-projecting image data by application of the non-uniform weighting factors.

           2.   The method of claim 1, wherein the weighting factors are based on
counts of a number of times pixels at image slice locations are traversed by radiation
from multiple different source positions during acquisition of the image data.

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           3.   The method of claim 2, comprising generating a count map
representative of the counts.

           4.   The method of claim 1, wherein the weighting factors are based on a
20 relative elevation of image slices from a detector plane.

           5.   The method of claim 4, wherein the weighting factors are determined by
application of a weighting function having values of unity for slice locations generally
within a subject to be imaged and values declining from unity near limits of the subject.

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           6.   The method of claim 5, wherein the values decline to a null value to
suppress computed contribution of regions outside the subject to be imaged to sensed x-
ray attenuation.

30   7.   The method of claim 1, wherein the weighting factors are based upon
specific projections generated by a system from which the image data is acquired.

8. The method of claim 7, wherein a separate set of weighting factors are generated for each projection.

9. The method of claim 8, wherein the weighting factors are determined during a calibration procedure for the system prior to acquisition of the image data.

10. The method of claim 1, wherein the weighting factors include at least two different types of factors selected from a group consisting of count weighting factors, slice weighting factors and projection weighting factors.

11. A method for processing tomosynthesis image data comprising:

determining count weighting factors representative of a number of times pixels of image slices are traversed by radiation from a plurality of source positions during imaging;

determining slice weighting factors for weighting image slices within a subject differently from locations near and beyond limits of the subject;

determining projection weighting factors accounting for differences in system response for a plurality of projections corresponding to the plurality of source positions; and

back-projecting tomosynthesis image data based upon the count weighting factors, the slice weighting factors and the projection weighting factors.

12. The method of claim 11, comprising generating a count map representative of the counts, a count map being generated for each image slice to be back-projected.

13. The method of claim 11, wherein the slice weighting factors are determined by application of a weighting function having values of unity for slice locations generally within a subject to be imaged and values declining from unity near limits of the subject.

14.   The method of claim 13, wherein the values decline to a null value to suppress computed contribution of regions outside the subject to be imaged to sensed x-ray attenuation.

5   15.   A method for processing tomosynthesis image data comprising:

determining count weighting factors representative of a number of times pixels of image slices are traversed by radiation from a plurality of source positions during imaging;

accessing the image data representative of X-ray attenuation of a subject of 10   interest at multiple source positions corresponding to multiple projections; and

back-projecting image data by application of the count weighting factors.

16.   A method for processing tomosynthesis image data comprising:

determining slice weighting factors for weighting image slices within a subject 15   differently from locations near and beyond limits of the subject;

accessing the image data representative of X-ray attenuation by a subject of interest at multiple source positions corresponding to multiple projections; and

back-projecting image data by application of the slice weighting factors.

20   17.   A method for processing tomosynthesis image data comprising:

determining projection weighting factors accounting for differences in system response for a plurality of projections corresponding to the plurality of source positions;

accessing the image data representative of X-ray attenuation by a subject of interest at multiple source positions corresponding to multiple projections; and

25   back-projecting image data by application of the projection weighting factors.

18.   A system for processing tomosynthesis image data comprising:

means for identifying a plurality of non-uniform weighting factors for use in back-projection processing of image data representative of X-ray attenuation by a 30   subject of interest at multiple source positions corresponding to multiple projections;

means for accessing the image data; and

means for back-projecting image data by application of the non-uniform weighting factors.

19. A system for processing tomosynthesis image data comprising:

means for determining count weighting factors representative of a number of times pixels of image slices are traversed by radiation from a plurality of source positions during imaging;

means for determining slice weighting factors for weighting image slices within a subject differently from locations near and beyond limits of the subject;

means for determining projection weighting factors accounting for differences in system response for a plurality of projections corresponding to the plurality of source positions; and

means for back-projecting tomosynthesis image data based upon the count weighting factors, the slice weighting factors and the projection weighting factors.

20. A computer program for processing image data comprising:

at least one machine readable medium; and

machine readable code stored on the at least one medium for carrying out routines for identifying a plurality of non-uniform weighting factors for use in back-projection processing of image data representative of X-ray attenuation by a subject of interest at multiple source positions corresponding to multiple projections; accessing the image data, and back-projecting image data by application of the non-uniform weighting factors.

21. A computer program for processing image data comprising:

at least one machine readable medium; and

machine readable code stored on the at least one medium for carrying out routines for determining count weighting factors representative of a number of times pixels of image slices are traversed by radiation from a plurality of source positions during imaging, determining slice weighting factors for weighting image slices within a subject differently from locations near and beyond limits of the subject, determining

projection weighting factors accounting for differences in system response for a plurality of projections corresponding to the plurality of source positions, and back-projecting tomosynthesis image data based upon the count weighting factors, the slice weighting factors and the projection weighting factors.

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